Student Information System

Requirement Specifications

March 11, 2025

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UIS & Student Community

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Epoka University

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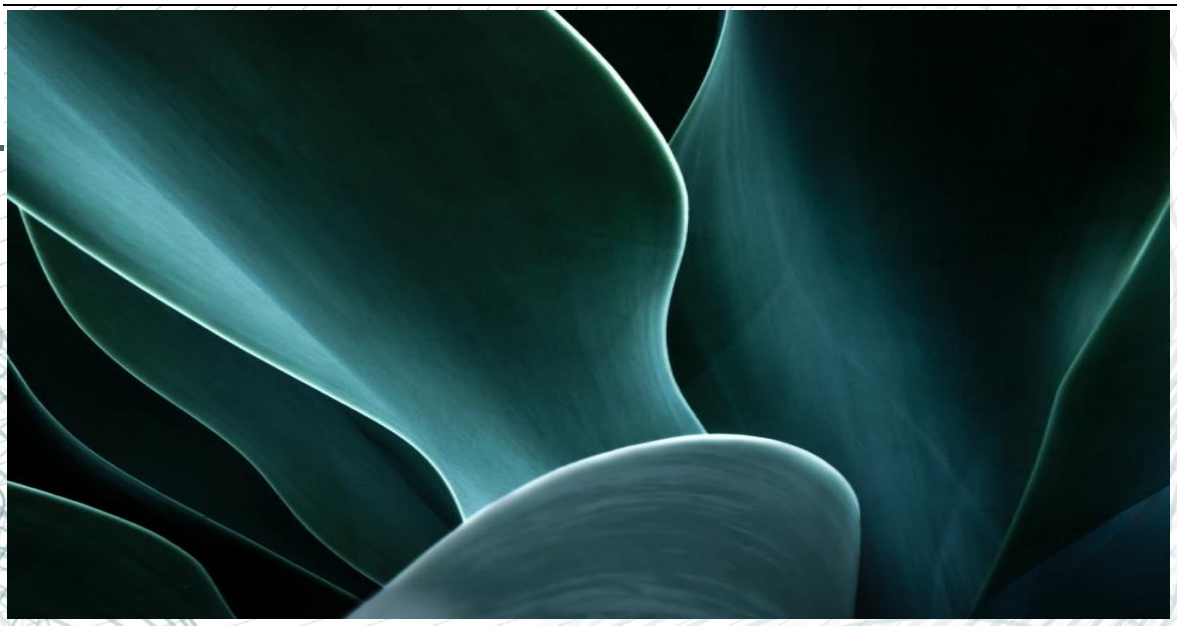
Project Overview

Our vision is to develop a student-centric system, designed to prioritize their needs and experiences. This system will encompass two integrated software solutions: one dedicated to the internal management of university operations and the other tailored to fostering a vibrant student community. These software applications will be offered as a comprehensive package. Universities that adopt this system will provide their enrolled students with full access to both platforms. However, individuals not affiliated with a participating university will still be able to access the community software independently.



University Information System (UIS)

Product Context

The first software is for the internal management of the university. This system is bought by the universities in the Albania.

The ***stakeholders*** of this system include:

- Students
- Academic Staff
- Finance Office
- Admissions Office
- Career Office
- ICT Coordination
- Registrar's Office

User Characteristics:

- User Authentication and Profile Management ensures secure access and management of user accounts and profiles.
- **Students** can access grades, selected courses, financial details, attendance records, transcripts, and student guidelines, and can enroll in classrooms.
- **Admissions Office** uploads the primary data of matura students upon signing their university entry contracts.
- **Academic staff** manages the syllabus, classroom materials, attendance records, grades, and perform academic reporting.
- **Finance Office** oversees student billing, payment tracking, financial aid management (including scholarships), and generates financial reports.
- **Career Office** facilitates job and internship postings, resume and interview preparation, and alumni networking.
- **Registrar's Office** maintains student records, uploads additional exam grades, processes exam requests, handles transcript requests, schedules courses, and performs degree audits.
- **Dean of Students** publishes student guides, fosters involvement in extracurricular activities, and generates club activity reports.

ThinkLink – Connecting through learning

Product Context

This system consists as a help for the students at different aspects such as videos, meeting with professionals, simulations, flashcards and other aids.
The ***stakeholders*** of this system include:

- Students
- Teacher and Instructors
- Educational Institutions
- Content Providers
- Regulatory Bodies
- Partners and Sponsors
- Company representatives
- Developers and IT Support Team

User Characteristics:

- **Students**: Students can enroll in classes, access a variety of learning tools like flashcards, games, and simulations, attend seminars, take practice tests with performance feedback, use a Pomodoro timer for productivity, participate in Q&A hubs, manage digital textbooks, and explore educational curiosities to deepen their knowledge.
- **Content Providers**: Content providers can create and manage educational content, such as flashcards, tests, videos, and simulations; assign specific resources to students based on curriculum needs; and moderate Q&A hubs to ensure quality and relevance of content.
- **Educational Institutions**: Educational institutions are responsible for reviewing and approving or rejecting classes created under their name and can oversee requests, existing courses, and related content to maintain standards.
- **Regulatory Bodies**: Regulatory bodies review flagged content to ensure compliance with laws, approve textbook and curiosity submissions, and oversee the accuracy of educational materials and user contributions
- **Administrators**: Administrators manage and moderate past exam papers to remove low-quality or non-compliant ones and ensure that flagged content in Q&A hubs adheres to community guidelines.
- **Company Representatives**: Company representatives are tasked with adding career-related opportunities for students by creating and managing resources, such as internship listings, job boards, and career-oriented seminars or workshops.

Constraints:

1. **Scalability**: The system must handle a growing number of users and data without performance degradation.
2. **Budgetary Limitations:** The cost of development, deployment, and maintenance must align with the university's financial resources.
3. **Interoperability**: Compatibility with existing university systems (e.g., learning management systems, student portals).

Dependencies:

1. **Technological Infrastructure**: Reliable servers, databases, and network connectivity to support the system.
2. **Stakeholder Input**: Collaboration with faculty, students, and administrators to ensure the system meets their needs.
3. **Content Availability**: Dependence on educators and students to populate the platform with relevant educational materials.
4. **Maintenance and Support**: Ongoing technical support and updates to address bugs and improve functionality.

Requirements - UIS

For this software the requirements are separated based on the user level.

- For entrance to the system, if the user is a part of campus community he will enter the university email and password, and automatically the user will have access to both the UIS and the student's community.
- If the person is not part of any registered university he will have access only in the community program and it is not allowed to enter to the UIS program. If any other user tents to access it, he will get a message "Access blocked". In the community the user can enter to the software if they have payed a fee using the payment by card.

Functional Requirements

1. ***Student Registration Process***

    1. **Admission Office**
        - Collects and verifies the necessary student information for university registration.
    2. **Contract Signing & Fee Payment**
        - Student signs the contract to confirm admission.
        - **Finance Office** verifies and confirms tuition fee payment.
    3. **Registrar's Office**
        - Receives the student's information after finance approval.
        - Creates and maintains the student profile with all related data.
    4. **Email Account Creation**
        - System automatically generates a university email account for the student.
        - Email is required for academic and administrative communication throughout the academic year.

2. **Attendance Tracking Process**

    1. **Faculty Member (Lecturer/Instructor)** records attendance per session (Present, Absent, Late).
    2. **System** updates attendance percentage in real-time and flags students below the required threshold.
    3. **Student** can view their attendance breakdown by course and week.
    4. **Academic Coordinator/Department Head** monitors attendance reports and ensures compliance with university policies.
    5. **Registrar's Office** enforces attendance policies, issuing warnings or taking necessary actions based on attendance records.

3. Course Selection & Enrollment Process

1. **Registrar's Office** verifies student eligibility (contract signed, tuition paid).
2. **Finance Office** confirms fee payment and financial approval.
3. **Student** accesses the course selection system based on academic level restrictions (Freshman, Sophomore, Senior).
4. **Academic Advisor** gets a notification about the student selections, approves or rejects selected courses.
5. **Registrar's Office** finalizes enrollment, and the student's course list is updated.
6. **System** updates timetable and enables access to course materials.

4. Academic Performance & Grading Process

1. **Student** selects the academic year and semester to view grades.
2. **Faculty** enters and finalizes grades for assessments (quizzes, exams, projects).
3. **System** automatically calculates weighted final grades based on grading criteria.
4. **Professors** have the ability to apply grade curves before finalizing results.
5. **Registrar's Office** confirms and uploads final grades.
6. **ICT Office** can unlock grades for editing if corrections are needed after finalization.
7. **Student** accesses final grades in both letter and numeric format.
8. After final approval, grades are automatically recorded in the student's transcript.
9. Weighted final grades and GPA calculations are updated accordingly.

5. Document Request & Processing

1. **Student** submits a document request (transcript, certificate, etc.).
2. **Registrar's Office** reviews and processes the request, prepares the document, updating the request status.
3. **System** notifies the student when the document is ready.
4. **Student** must complete the required payment at the **Finance Office** before collecting the document.
5. **Student** collects the document in person or downloads a digital copy if available.

6. Classroom & Learning Management

1. **Student** joins a course classroom using a code provided by the professor.
2. **Faculty** uploads syllabi, lecture materials, assignments.
3. **Students & Faculty** engage through posts, announcements, and discussions.
4. **System** displays upcoming assignments and submission deadlines.

7. Professional Practice & Career Services Process

1. **Student** uploads CV and applies for available internships.
2. **Career Office** reviews applications and connects students with companies.
3. **System** tracks application status (submitted, approved, rejected).
4. **Student monitors** progress and receives updates on job placement.
5. **Career Office** can add new companies into the system, including name, logo, and description.
6. **System** maintains a company directory for student reference.

8. Student Applies for Additional Exams

1. Students submit an application for additional exams through the system.
2. **Registrar's Office** reviews the request based on university policies.
3. If approved, the additional exam is scheduled, and the student is notified.
4. Faculty conducts and evaluates the additional exam.
5. The new grade is recorded in the system.
6. **ICT Office** ensures the updated grade is reflected in the transcript.

9. Timetable Scheduling Process

1. **Admission Office** creates and finalizes the semester timetable.
2. System auto-generates schedules based on faculty availability and student enrollments.
3. **Registrar's Office** reviews the schedules to ensure they follow university policies, avoid class overlaps, and meet room capacity limits, resolving any issues found
4. **Head of department** assigns courses to the academic staff, in alignment with department requirements.
5. Classrooms and labs are allocated according to student capacity and course type.
6. **Students** access their schedules through the university portal.
7. System updates and notifies **students** and **faculty** of any schedule changes.
8. **Students** can request timetable modifications during the add/drop period
9. **Academic Advisors** and **Registrar's Office** review and approve schedule change requests.

10. Degree Audit Process

1. **Registrar's Office** retrieves student academic records.
2. **System** analyzes completed courses, earned credits, and remaining requirements.
3. **System** generates a degree audit report, displaying progress toward graduation.
4. **Registrar's Office** verifies if the student meets graduation eligibility criteria.
5. **System** highlights missing courses or credits if requirements are unmet.
6. **Student** receives notifications regarding degree progress and remaining coursework.
7. **Registrar's Office** updates the audit status once graduation requirements are fulfilled

Nonfunctional Requirements

- **Product Requirements**

These define how the product must behave, focusing on usability, performance, reliability, and functionality.

- **Usability Requirements**

1. An intuitive interface for students, faculty, and staff to ensure smooth navigation across functions (e.g., course selection, grading, financial information access) by using descriptive names and easy interfaces.

- **Performance Requirements**

2. The system must handle up to 5,000 concurrent users during peak times without delays (more than 2 seconds) or crashes.
3. Response time for actions like grade updates or course selections must be less than 2 seconds.
4. Real-time updates shall be provided for student and financial information, ensuring no duplication of data.
5. The system shall accommodate increasing numbers of users and additional university departments without a reduction in performance.

- **Organizational Requirements**

These arise from organizational processes, policies, or internal standards.

6. Users shall authenticate their access to the system through two forms of verification: primary authentication(A valid username and password); secondary authentication(A one-time passcode (OTP) sent via email, SMS, or a designated authenticator app.)
7. Restrict access to the University Information System (UIS) to users with verified school accounts (no external or unauthorized accounts allowed).
8. Sensitive information, such as financial and personal data, must be encrypted both at rest and in transit.
9. The registration process for students shall not take longer than 10 minutes to complete.
10. The system shall support up to 2,000 student registrations per day.
11. Faculty shall submit grades and attendance updates for each student within a maximum of 2 weeks after classes conclude; updates beyond this period shall not be permitted.
12. The system shall guarantee 99.9% availability, with automated backups and disaster recovery protocols in place.

- **External Requirements**

These result from external factors such as legal, regulatory, or cultural considerations.

13. The student registration must be held within the registration period specified by the Educational Ministry.

Requirements - ThinkLink

Functional Requirements

1. Class Enrollment & Access Process (Student & System)

1. The **system** displays available and enrolled classes for students.
2. A **student** selects a class and clicks "Enroll."
3. The **system** updates the student's enrollment status and grants access to class materials.
4. Only enrolled **students** gain access to interactive features (tests, flashcards, games, and seminars).
5. The **system** enforces restrictions for non-enrolled students (viewing only materials but no participation).

2. Class Creation & University Approval (Content Provider & University Representative)

1. A **content provider** creates a new class and assigns it to a university.
2. **The university** receives an automatic notification of the new class request.
3. **The university representative** approves or rejects the request.
4. If approved, the class is added to the university's list of official courses.
5. If rejected, the content provider receives a rejection notification with feedback.

3. Test & Seminar Participation (Student & Content Provider)

1. A **content provider** creates a test or schedules a seminar.
2. Enrolled **students** receive a notification about the test or seminar.
3. **Students** access and participate in the test or seminar at the scheduled time.
4. The **system** records test responses and seminar attendance.
5. The **content provider** reviews test results and seminar participation data.
6. **Students** receive feedback on their test performance

4. Curiosities:

1. **Users** can create and submit their own curiosities by sharing educational facts, insights, or thought-provoking questions. They can add relevant tags, select appropriate categories, and provide a detailed description for each submission.
2. **The system** allows users to browse, explore, and discover educational facts, curiosities, and insights across various academic fields. Content is categorized by subject, trending topics, and user preferences, ensuring a personalized learning experience.
3. **Users** can engage with curiosities by liking, commenting, and sharing them within the platform. Discussion forums enable deeper academic debates, while a bookmarking feature allows users to save curiosities for later reference.

5. Simulations and Video Explanations Process

1. **Student** explores complex concepts through interactive simulations in a virtual environment.
2. **System** allows students to pause, rewind, and take notes within the video interface for better comprehension.
3. **Platform** provides video explanations for key topics, created by subject-matter experts.
4. **System** recommends related simulations and video explanations based on students' learning progress by analyzing their past interactions, quiz results, frequently accessed topics, and areas where they need improvement.
5. **Content Providers** assign specific simulations and video lessons for a specific category for all students.

6. Practice tests and Quizzes:

1. **Student takes** timed and untimed practice tests with various question types, including multiple-choice, short answer, and essay-style questions.
2. **System** provides auto-grading and instant feedback to enhance learning.
3. **System** generates performance reports and analytics to help students identify strengths and weaknesses.
4. **Student** monitors progress, reviews detailed explanations of correct answers, and revisits previous exam attempts.
5. **Content Provider** clicks the "Create Test" button to design multiple questions and uploads the test to the system with its name specified.

Q&A Hub Processes

7. Create, Answer, and Interact with posts

1. **User** logs in to the system.
2. **User** creates a new post or question by entering a title, category, description, and tags.
3. **User** submits the post, and the system displays it in the relevant category.
4. Other **users** can view the post and respond by submitting answers or comments.
5. **Users** can upvote or downvote both questions and answers based on usefulness and accuracy.
6. The **original poster** can mark a response as the "Best Answer" to highlight the most helpful solution.
7. **System** sends notifications when users receive responses, comments, or mentions.

8. Content Moderation and Management

1. **User** flags inappropriate, spam, or off-topic content.
2. **Moderators** receive notifications of flagged content.
3. **Moderators** can edit, hide, or remove content that violates guidelines.
4. **Content Providers and Academic Staff** can also edit or delete inappropriate posts.

9. Search and Discover Content

1. **User** enters keywords or phrases into the search bar.
2. **System** retrieves relevant questions, answers, and discussions.
3. **User** browses the results and selects the most relevant content.

10. Set Up and CustomizePomodoro Timer

1. **User** navigates to the Pomodoro Timer feature.
2. **User** configures settings, including work session length, break duration, and cycle count.
3. **User** starts the timer, and the system begins tracking the session.
4. The **system** notifies the user when the work session ends and break time starts.

11.Task Management and Progress Tracking

1. **User** creates a list of tasks to complete during sessions.
2. **User** edits or deletes tasks as needed.
3. The **system** tracks completed tasks and displays progress.
4. Notifications remind users to start new sessions if inactive.

12. Flashcard Creation & Management

1. A **content provider** creates flashcards by adding text, images, or mathematical formulas.
2. The **system** saves the flashcards and allows organization into categorized decks.
3. The **content provider** can edit, update, or delete flashcards as needed.

13.Flashcard Access & Study Modes

1. A **student** browses or searches for flashcard decks using keywords, tags, or subjects.
2. The **system** displays available flashcards, and the student selects a study mode:
   - Standard Mode (flip front and back of cards).
   - Quiz Mode (multiple-choice or fill-in-the-blank).
   - Spaced Repetition Mode (adaptive review based on performance).
3. The **student** can shuffle cards for randomized practice.

14.Search, Tracking & Gamification

1. A **student** searches for flashcards using keywords, tags, or subjects.
2. The **system** uses the Spaced Repetition [1] to suggest flashcards that need revision based on past performance.
3. The **system** tracks progress, providing mastery analytics and revision suggestions.
4. **Students** earn points and badges for completing revision tasks.
5. **Students** can participate in weekly/monthly challenges where they compete on quiz scores or streaks to earn additional rewards.

[1] Spaced repetition is a special algorithm which helps decide when to show a flashcard again based on how well the student remembers it. If they struggle, it appears sooner; if they remember well, it appears later.

15.Job and Internship Listings

1. A **company representative** posts job and internship listings on the platform, providing details like company name, role description, and application deadlines.
2. The **company representative** categorizes listings by industry, location, and job type (full-time, part-time, remote).
3. **Students** search using filters (industry, location, job type), and the system displays relevant results.

16. Profile Creation & Customization

1. A **student** creates a career profile, entering details about their education, skills, and work experience.
2. The **student** can edit their profile at any time to update relevant information.

17. Search & Application Process

1. A **student** searches for internships or job opportunities using keywords, location, job type, or experience level.
2. The **student** selects a job or internship and applies directly by attaching relevant documents (e.g., resume, cover letter).
3. The **company representatives** can shortlist candidates, contact them for interviews, or reject applications.
4. The system updates the application status (e.g., shortlisted, interview scheduled, rejected) and notifies students accordingly.

18. Virtual Career Fairs & Events

1. **Company representatives** host virtual career fairs or webinars to interact with students.
2. **Students** attend these events to learn more about job opportunities and network with company representatives.

19. Past Papers Process

1. **Student** uploads, categorizes, and searches past exam papers, quizzes, and assignments based on university, course, subject, and academic year.
2. **System** allows students to preview past papers before downloading and enables them to rate, review, and provide feedback to ensure quality and relevance.
3. **Administrators** use moderation tools to review and remove past papers that violate content guidelines or are of low quality.

20. Textbooks

1. **System** provides a digital library where students can browse and search for textbooks categorized by subject, course, and academic year.
1. **Users** can download textbooks in multiple formats, such as PDF, and access them through an integrated reader with highlighting, annotations, and bookmarks.
2. **System** enables users to translate textbooks into different languages and customize reading modes for better usability.
3. **Content Providers** upload and maintain educational materials through textbook management.
1. **Regulatory Bodies** oversee approvals to ensure compliance with academic standards.

21. Seminars Process

1. **Students and Institutions** create and manage seminars, including details such as topic, speaker(s), date, time, and delivery mode.
2. **Students** register for seminars and receive automated reminders via email or in-app notifications.
3. Online Seminars support interactive features such as live chat, Q&A sessions, and polls to enhance engagement.
4. **System** stores recorded seminars, allowing students to access and replay them later for reference.

Nonfunctional Requirements

- **Product Requirements**

These specify how the product must behave, including usability, performance, availability, and security requirements.

- **Usability Requirements**

1. The platform must offer a user-friendly and visually appealing interface for students, teachers, and content providers to ensure smooth navigation across functions such as course management, collaboration, and content delivery.
   - All core features, such as course creation, grading, and video conferencing, shall be accessible from the homepage within 3 clicks or fewer.
   - Interface components (e.g., buttons, menus) must respond to user actions (e.g., clicks, taps) within 1 second.

- **Performance Requirements**

3. The system must support up to 10,000 active users at any given time without delays, crashes, or degraded performance.
4. Loading time for videos, flashcards, and simulations must not exceed 3 seconds.
5. The system must seamlessly scale to accommodate:
   - A 10% annual growth in the number of users.
   - Addition of at least 50 new courses per quarter and 3 new institutions per year without impacting system performance.

6. The platform shall maintain optimal performance with an average response time for core actions (e.g., enrolling in courses, submitting assignments) not exceeding 2 seconds, even under increased usage.

- **Availability Requirements**

7. The community system must ensure 24/7 availability for students worldwide, with redundancy solutions to prevent downtime.
8. Automated failover systems and disaster recovery mechanisms shall ensure data is restored within 15 minutes in case of a system outage.
9. A 99.9% uptime guarantee shall be enforced, meaning downtime shall not exceed 8.76 hours annually. Scheduled maintenance shall occur during off-peak hours (e.g., 2 AM–5 AM UTC) and must not exceed 4 hours per month.

- **Security Requirements**

10. For the Student Community, users must register an account specifically for the platform. Access will require payment of a fee, after which users can log in with their registered account.

- **Organizational Requirements**

These arise from organizational processes, policies, or internal standards.

11. The platform must support a minimum of 10 languages (e.g., English, Spanish, Chinese) and allow users to select their preferred regional settings (e.g., time zone, currency format) during account setup.
12. Language translations must not exceed a 2-second delay during content rendering (e.g., interface text and course descriptions).

- **External Requirements**

These result from external factors such as legal, regulatory, or cultural considerations.

13. The platform shall actively monitor and prevent the dissemination of harmful, discriminatory, or offensive content, ensuring a safe and inclusive environment that encourages collaboration and mutual support among students.

UIS & Students Community

Nonfunctional Requirements for both

- **Product Requirements**
  These focus on how the product must behave, including functionality, usability, and performance:

  1. The software must allow easy updates, bug fixes, and feature enhancements to meet the evolving needs of users through continuous refactoring.
  2. Both systems must be accessible via web browsers and mobile devices (iOS/Android) with full functionality on each platform.

- **External Requirements**
  These are driven by external factors, such as legal, regulatory, or regional constraints:

  3. The platform shall comply with the Albanian Law "For the Protection of Personal Data," ensuring that students' personal and academic information is securely stored, processed, and accessed only for educational purposes.